

Claims

1. A method of handling calls in a telecommunication system comprising subscribers and network elements such as exchanges, comprising the steps of:

- 5 storing in the system subscriber information including information including service definitions of a subscriber;
- establishing connections to the subscriber via a network element having access to the subscriber information of the subscriber;
- allowing a subscriber to define in his subscriber information that his
- 10 incoming calls are to be forwarded to another subscriber; and
- indicating the forwarding of a call and optionally caller's identity in the call establishment signaling;

characterized in that the method further comprises the steps of:

- 15 storing a group of caller identities in the subscriber information for defining a group of allowed caller identities, said allowed caller identities being either those included in or excluded from the group,
- determining whether the caller identity of an incoming forwarded call belongs to the allowed identities by comparing the caller identity with said
- 20 group of caller identities, in response to receiving the call establishment signaling in the network element,
- continuing establishing the incoming forwarded call if the caller identity belongs to the allowed identities, and
- rejecting the incoming forwarded call if the caller identity does not
- 25 belong to the allowed identities.

2. A method according to claim 1 in which the subscriber defines himself the group of caller identities.

- 3. A method according to claim 1 or 2 in a system in which
- a call forwarding counter is used in the call establishment signaling,
- 30 in response to receiving call establishment signaling requesting establishment of a call from a calling subscriber to a first subscriber and determining that the first subscriber has forwarded his calls to a second subscriber, the call is forwarded to the second subscriber, and the value of the call forwarding counter is incremented,

35 characterized in that

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to determine whether the call has been forwarded, the value of the call forwarding counter indicated in the call establishment signaling is compared to a predefined value, and if the value of the call forwarding counter exceeds the predefined value, the call is determined to be a forwarded one.

5 ~~4.5.~~ A method according to any of the preceding claims, characterized in that the callers, whose calls are to be rejected, are defined by the group of caller identities.

~~5.6.~~ A method according to any of the claims 1 to 4, characterized by
10 defining by the group of caller identities the callers whose calls are to be accepted, and
rejecting the calls whose caller identity does not belong to said group.

~~6.~~ A method according to any of the preceding claims, characterized by accepting calls from an unknown caller number.

~~7.8.~~ A method according to any of the preceding claims in a system comprising further an intelligent network capable of storing subscriber information, characterized in that
20 in the network element, the event of receiving a forwarded incoming call to a subscriber having determined his forwarded incoming calls to be rejected is defined to be a trigger for sending a query to the intelligent network, and in response to having received the request to establish a call to a subscriber and having determined that the call has been forwarded and the subscriber has determined his forwarded incoming calls to be rejected, a query
25 having the calling party number as a parameter is sent to the intelligent network, and

in the intelligent network, the set of allowed calling numbers in the subscriber information is stored and in response to having received the query sent by the network element, the set of allowed calling numbers is retrieved
30 from the subscriber information, the calling party number is compared to the set, and the network element is instructed to continue the call establishment procedure if the calling party number belongs to the set of allowed calling numbers and to reject the incoming call if the calling number does not belong to the set.

35 ~~8.8.~~ A method according to any of the preceding claims in a fixed network comprising a local exchange the subscriber is connected to, characterized in that the network element is a local exchange and the sub-

scriber information is stored in a database the local exchange is connected to.

10. A method according to any of the claims 1 to 8 in a mobile telecommunication system comprising

5 a mobile services switching center (MSC) serving the subscriber, and a visitor location register (VLR) connected to the mobile services switching center (MSC),

characterized in that the subscriber information is stored in the visitor location register (VLR) and the network element is the mobile services switching center (MSC).

11. A method according to any of the claims 1 to 8 in a mobile telecommunication system comprising

a home location register (HLR(C); HLR-C; MHLR) storing the subscriber information of a subscriber, and

15 a gateway mobile services switching center (GMSC-C) via which the incoming calls of the subscriber are routed,

characterized in that the subscriber information is stored in the home location register (HLR) and the network element is the gateway mobile services switching center (GMSC-C).

12. A method according to any of the claims 1 to 8, characterized in that to determine whether the call has been forwarded, the presence of the forwarding number indicating the identity of the party having forwarded is studied, and if the forwarding number is present, the call is determined to be a forwarded one.

13. A telecommunication system comprising:

exchanges,

subscribers,

means (75,77) for storing subscriber information including information about the service definitions of a subscriber,

30 means (LE(A),LE(B),LE(C)) for establishing calls to a subscriber via an exchange (GMSC-C) having access to the subscriber information of the subscriber,

means (73) for allowing a subscriber to define in his subscriber information that his incoming calls are to be forwarded to another subscriber, and

means for indicating (14) in the call establishment signaling the forwarding of a call, and optionally a caller identity, characterized in that the system further comprises:

5 storing means (75,77) for storing a group of caller identities in the subscriber information for defining a group of allowed caller identities, said allowed caller identities being either those included in or excluded from the group,

10 determining means (76) for determining whether the caller identity of an incoming forwarded call belongs to the allowed identities by comparing the caller identity with said group of caller identities, in response to receiving the call establishment signaling in the network element,

continuing means (78) for continuing establishing the incoming forwarded call if the caller identity belongs to the allowed identities, and

15 rejecting means (79) for rejecting the incoming forwarded call if the caller identity does not belong to the allowed identities.

¹³14. A telecommunication system according to claim ¹²13, characterized in that the determining means (76) is arranged to verify the forwarding of call using a call forwarding counter.

¹⁴15. A telecommunication system according to claim ¹²13 or ¹³14, characterized in that the system further has configuration means (73) for configuring the subscriber information stored in the storing means (75,77). ¹⁵

16. A network element for a telecommunication system having:
exchanges,
25 subscribers,
means (75,77) for storing subscriber information including information about the service definitions of a subscriber,

30 means (LE(A),LE(B),LE(C)) for establishing calls to a subscriber via an exchange (GMSC-C) having access to the subscriber information of the subscriber,

means (73) for allowing a subscriber to define in his subscriber information that his incoming calls are to be forwarded to another subscriber, and

35 means for indicating (14) in the call establishment signaling the forwarding of a call, and optionally a caller identity, characterized in that the network element comprises:

storing means (75,77) for storing a group of caller identities in the subscriber information for defining a group of allowed caller identities, said allowed caller identities being either those included in or excluded from the group,

5 determining means (76) for determining whether the caller identity of an incoming forwarded call belongs to the allowed identities by comparing the caller identity with said group of caller identities, in response to receiving the call establishment signaling in the network element,

continuing means (78) for continuing establishing the incoming forwarded call if the caller identity belongs to the allowed identities, and

10 rejecting means (79) for rejecting the incoming forwarded call if the caller identity does not belong to the allowed identities.

~~16~~ 17. A network element according to claim 15, characterized in that a call forwarding counter is used for verifying the forwarding of call.

~~17~~ 18. A home location register for a mobile telecommunication system comprising:

exchanges,
subscribers,

means (75,77) for storing subscriber information including information about the service definitions of a subscriber,

20 means (LE(A),LE(B),LE(C)) for establishing calls to a subscriber via an exchange (GMSC-C) having access to the subscriber information of the subscriber,

means (73) for allowing a subscriber to define in his subscriber information that his incoming calls are to be forwarded to another subscriber, and

means for indicating (14) in the call establishment signaling the forwarding of a call, and optionally a caller identity, characterized in that the home location register comprises:

30 storing means (75,77) for storing a group of caller identities in the subscriber information for defining a group of allowed caller identities, said allowed caller identities being either those included in or excluded from the group,

determining means (76) for determining whether the caller identity of an incoming forwarded call belongs to the allowed identities by comparing the caller identity with said group of caller identities, in response to receiving the call establishment signaling in the network element,

continuing means (78) for continuing establishing the incoming forwarded call if the caller identity belongs to the allowed identities, and
rejecting means (79) for rejecting the incoming forwarded call if the caller identity does not belong to the allowed identities.